

Resolution 14-3R1

MICROWAVE POWERED HIGH ALTITUDE RELAY PLATFORMS

The SFCG,

CONSIDERING

- a) that microwave powered high altitude radio platforms are proposed to operate at altitudes up to 20 km;
- b) that these platforms, which will be powered by the transmission of electro-magnetic energy from the surface of the Earth, require very high levels of power from the ground (>500 kW) to propel and operate the aircraft and associated electronic equipment;
- c) that the system operators are contemplating such power transmission in bands allocated to the radiolocation service and ISM, which may be an inappropriate use of that service as presently defined;
- d) that the radiated beam of power (EIRP >135 dBW) required to operate the platform may produce power density levels at orbital altitudes sufficient to cause physical damage to space-based active and passive sensors and other radio equipment, even when operating in frequency bands removed from the fundamental power transmission frequency;
- e) that the radiated beam of power has the potential to cause high levels of out-of-band and harmonic emissions from intermodulation products resulting from the non-linear characteristics of the platform rectifying antenna (RECTENNA) used to convert RF energy to direct current energy to operate the platform;
- f) that the platforms are intended to support terrestrial radio services over a wide area (> 750,000 km²);
- g) that such radio services may provide benefits in certain areas of low-to-medium density population distribution, but not without significant potential for harmful interference to existing terrestrial and space radio systems.

RESOLVES

- 1) that member agencies urge their respective administrations to take into account the following considerations during the licensing process for Microwave Powered High Altitude Relay Platform systems:

- 1.1) Interference to other radio services resulting from intermodulation products generated by the high power densities interacting with the non-linear characteristics of the RECTENNA;
- 1.2) interference and potential damage to avionics equipment on board aircraft that fly through or near the high power beam;
- 1.3) interference and potential damage to telecommunication equipment on satellites that traverse the high power beam;
- 1.4) potential physical damage to active and passive sensors on low orbiting satellites which traverse the high power beam;
- 1.5) the propriety of using allocations to the radiolocation service, as currently defined, for the purpose of transferring power to the aircraft.